UV/Visible Light/LED Curable Multi-Substrate Precision Medical Bonder

**PRODUCT DESCRIPTION**

Incure Cyro-Weld™ 5942 UV/Visible Light/LED curable adhesive is an acid-free, multi-substrate binder. It is an excellent choice for medical devices plastic assembly on flexible PVC to PC and dissimilar substrates such as metals, glass and FR4 materials on a single application. Incure 5942 exhibits excellent moisture and temperature resistance and is extremely tough material with high elongation of 350%. Ideal for bonding of medical devices subjected to thermal cycling, ETO or gamma sterilization.

**UNCURED PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical Type</td>
<td>Urethane Acrylate, 100% Solids, No Solvents</td>
</tr>
<tr>
<td>Appearance</td>
<td>Single Component, Clear Transparent</td>
</tr>
<tr>
<td>Density, g/ml</td>
<td>1.02</td>
</tr>
<tr>
<td>Flash Point, °C</td>
<td>&gt; 93</td>
</tr>
<tr>
<td>Viscosity, cP</td>
<td>200 - 400 (20°C) Spindle 2</td>
</tr>
</tbody>
</table>

Other viscosities are available upon request. If the viscosity range requested is not our standard offering, this product may be produced with a small lab fee.

Email us at: support@uv-incure.com or your nearest local distributor for more information.

**CURED PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shore Hardness, Durometer</td>
<td>D65 to D75</td>
</tr>
<tr>
<td>Linear Shrinkage / Expansion (°C)</td>
<td>0.05%</td>
</tr>
<tr>
<td>Water Absorption at 24hrs</td>
<td>0.36%</td>
</tr>
<tr>
<td>Tensile (PSI) PC-PC / PC-SS</td>
<td>6,800^/4,500^</td>
</tr>
<tr>
<td>Surface After Full Cure</td>
<td>Slight Tack</td>
</tr>
<tr>
<td>Thermal Range (Brittleness / Degrades) °C</td>
<td>-55 to 150</td>
</tr>
<tr>
<td>Young's Modulus of Elasticity, MPa (PSI)</td>
<td>294 (42,500)</td>
</tr>
<tr>
<td>Linear CTE (α1 &amp; α2), ppm/°C</td>
<td>α1=0.4, α2=0</td>
</tr>
</tbody>
</table>

*ASTM D570

1 ASTM refers to Incure Standard Test Method.

**RECOMMENDED UV CURE SCHEDULE (FULL CURE)**

<table>
<thead>
<tr>
<th>Incure UV Curing Lamp Model</th>
<th>Exposure Time (s)</th>
<th>Cured Distance (ø mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>F500™ ARC Focused (3” x 5” )/ (ø mm)</td>
<td>600</td>
<td>1,000</td>
</tr>
<tr>
<td>F400™ ARC Flood (4” x 4” )/ (ø mm)</td>
<td>325</td>
<td>500</td>
</tr>
<tr>
<td>LM1040-365™ LED (mW/cm²)</td>
<td>325</td>
<td>500</td>
</tr>
<tr>
<td>LM1040-405™ LED (mW/cm²)</td>
<td>325</td>
<td>500</td>
</tr>
</tbody>
</table>

**UV INTENSITY REFERENCE TABLE**

<table>
<thead>
<tr>
<th>Wavelength (Å)</th>
<th>UVA (320 - 400nm)</th>
<th>UVB (290 - 320nm)</th>
<th>UVC (200-250nm)</th>
<th>VUV (400-700nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Intensity</td>
<td>223 mW/cm²</td>
<td>56 mW/cm²</td>
<td>4 mW/cm²</td>
<td>0 mW/cm²</td>
</tr>
<tr>
<td>Total Energy Required</td>
<td>1,115 mJ/cm²</td>
<td>280 mJ/cm²</td>
<td>19 mJ/cm²</td>
<td>0 mJ/cm²</td>
</tr>
</tbody>
</table>

*Note: This product has been thoroughly tested to cure with F200™ UV flood lamp intensity wavelengths (shaded) are crucial for curing this product. All measurements are made with ETI UV PowerLite. If you are unable to fully cure this product for some reasons, pls email us for assistance with your curing information.*

**SHELF-LIFE, STORAGE, USE AND HANDLING OF THIS PRODUCT**

Shelf-Life of this unopened product is a minimum of ONE (1) year from date of manufacture. Avoid direct exposure of bottle to visible light at all times. Containers should remain covered when not in use. Product should be stored in a dark cool place of 10°C to 32°C. Transfer of product into other packages void all warranties. Users should ensure all bonding surfaces are free of grease, mold release, or any contaminants, as bonding performance will be compromised.

**ETO and GAMMA STERILIZATION**

All Incure medical products are formulated to subject to standard sterilization methods, such as ETO and Gamma Radiation of 25 to 50 kGrays (cumulative). Enhanced moisture and thermal resistance of this product show excellent adhesion and bonding strength after one cycle of steam auto-clave test. Depending on bond design and structure of the application, users should test specific assemblies after subjecting them to sterilisation. Consult Incure Support Team for assistance, if your devices are subjected to more than one sterilization cycles.

**NOTE**

The data contained in this document is furnished for information only. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user’s responsibility to determine suitability for the user's purpose of any production methods mentioned herein. INCURE will not be liable for any indirect, special, incidental or consequential loss or damage arising from this INCURE product, regardless of the legal theory asserted. INCURE recommends that each user adequately test its proposed use and application before repetition of use, using this data as a guide.
Material Safety Data Sheet (MSDS)

Released On: Apr 6, 2016
Version: 5942-08

Section 1 - Product and Company Identification

Product Name: Technical Data Sheet
Product Code: 5942

DECLARATION: The information furnished here is to the best of our knowledge, INCURE Incorporation does not assume any liability whatsoever for the accuracy or completeness of information contained herein. Final determination of suitability of any material is the sole responsibility of the end-user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exists.

Company / Supplier Name: Incure Inc.
Address: 1 Hartford Square, Box 16 West, Suite C-3 West Gate, Door 18, New Britain, CT 06002, USA
Phone: (860) 748-2979

Emergency Contact Information: Tel: (860) 748-2979

Section 2 - Hazards Identification

GHS Pictogram

Signal Word: GH507 Warning
GHS Hazard Phrases:
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.
- H411 Harmful to aquatic life with long lasting effects.

GHS Precautionary Phrases:
- P271 Use in a well-ventilated area.
- P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
- P102 Keep out of reach of children.
- P262 Do not get in eyes, on skin or on clothing.

GHS Response Phrases:
- P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P333+P313 If skin irritation or rash occurs: Get medical advice/ attention.
- P234 Keep only in original container.

GHS Storage and Disposal Phrases:
- P501 Dispose of contents/ container in accordance with local regulations.

GHS Classification:
- Physical and Chemical Hazards: Not Classified.
- Health: H315, H319, H319, H335
- Environment: H411

Section 3 - Material Composition / Safety Data on Product

CAS No. | % Composition | Description | GHS Classification
---|---|---|---
Proprietary | 20 - 40 | Specialty Urethane Acrylate Oligomer Blend | H315, H319, H335

Proprietary | 15 - 25 | Isobornyl Acrylate | H315, H319, H335

Proprietary | 0 - 5 | 2-Hydroxyethyl Methacrylate | H315, H319, H335

Proprietary | N.A. | Acrylic Acid | H326, H302, H303, H341, H315, H319, H332, H335, H400

Proprietary | 1 - 5 | Photo-Initiator | H315, H319, H335

Proprietary | 5 - 10 | N,N-Dimethylacrylamide | H315, H319, H335

Proprietary | 0 - 5 | 1-Vinylhexahydo-2H-Azepin-2-one | H315, H319, H335

Proprietary | 0 - 5 | Specialty Urethane Acrylate Oligomer Blend | H315, H319, H335

Proprietary | 0 - 5 | Specialty Co-Monomer Blend | H315, H319, H335

7631-86-9 | None | Silicon Dioxide | H315, H319, H335

Section 4 - First-Aid Measures

After Inhalation: Provide ample fresh air. Provide artificial respiration, give oxygen if experience difficulties in breathing. Consult doctor if symptoms persists.

After eye contact: Rinse eye for up to 15 minutes under running water. If symptoms persists, consult an eye doctor.

After skin contact: Immediately wash with water and soap thoroughly. Remove contaminated clothings.

After Swallowing: Seek medical attention and treatment.

Section 5 - Fire-Fighting Measures

Suitable Extinguishing Agents: Water spray, dry chemical or carbon dioxide will be useful. Fight larger fires with water spray or alcohol resistant foam.

Protective Equipment: Mouth respiratory protective device (face mask) is necessary in the event of fire.

Unusual fire or Explosion Hazards: Uncontrolled polymerization may occur at high temperatures due to explosions or rupture. Toxic fumes and irritating organic vapors may be present.

Section 6 - Accidental Release Measures

Person-related Safety Precautions: Not Required

Measures for environmental protection: Inform respective authority in case of seepage into water course or sewage system. Do not allow to enter sewers or waterways.

Measures for cleaning / collecting: Soak up with absorbent inert materials (sand, silica gel, sawdust). Dike area to prevent spreading. Dispose of as a chemical waste in accordance with current local, state and federal regulations. Please refer to Section 8 prior to clean-up.

Section 7 - Handling and Storage

Handling:
- Information for safe handling at workplace: Keep away from heat and direct sunlight. Use product with good ventilation/exhaust.

Storage:
- Requirements to be met by storerooms: Information about storage in one common storage facility
- Avoid exposure to sunlight.
- Not required. Keep bottle cap / receptacle tightly sealed.

Information about protection against explosions and fire:
- No special measures required
- Maximum Storage Temperature: < 35°C (95°F)

Section 8 - Exposure Controls and Personal Protection

Additional information about design of technical systems: No additional data, please refer to Section 7

Components with limit values that require monitoring: Product does not contain any relevant quantities of materials with critical values needing monitoring at workplace

Additional information:
- General protective and hygienic measures: Keep away from foodstuffs, beverages such as drinking water. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with eyes and skin.

Breathing equipment:
- Use respiratory filter device in case of brief exposure resulting in discomfort. For prolonged exposure, use respiratory protective device that is independent of circulating air.
Material Safety Data Sheet (MSDS)

Released On: Apr 6, 2016 (08)
Reprinted On: Jul 16, 2019

Protection of hands
Use protective impermeable gloves that are resistant to the product. Selection of glove material should consider penetration times, rates of diffusion and degradation.

Protection of eyes
Use tightly sealed goggles for best protection in a poorly ventilated area.

Section 9 - Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form / Color / Odor</td>
<td>Fluid / According to Technical Data Sheet / Characteristics</td>
</tr>
<tr>
<td>Change in condition beyond melting point</td>
<td>Undetermined</td>
</tr>
<tr>
<td>Change in condition beyond boiling point</td>
<td>115°C (240°F)</td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermal decomposition / conditions to be avoided</td>
<td>No decomposition if used according to specification</td>
</tr>
<tr>
<td>Dangerous reactions</td>
<td>None</td>
</tr>
<tr>
<td>Dangerous products of decompositions</td>
<td>Some Oxides of following chemicals may be formed - Carbon, Nitrogen, Silicon, Phosphorous, Amines.</td>
</tr>
<tr>
<td>Additional Information</td>
<td>Smoke and toxic fumes may evolve as a result of uncontrolled exothermic chemical reactions caused by large masses of materials interacting with curing agents (peroxides, amines, etc) and / or exposure to UV light / sunlight.</td>
</tr>
</tbody>
</table>

Section 11 - Ecological Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Toxicity - LD/LC50 values that are relevant for classification</td>
<td>5888-33-5 Isobornyl acrylate 900 mg/kg (rat) 0.65mg/l (rat)</td>
</tr>
<tr>
<td>Dermal LD50</td>
<td>&gt; 5000 mg/kg (rabbit)</td>
</tr>
<tr>
<td>Inhalative LD50/4hr</td>
<td>-</td>
</tr>
<tr>
<td>Primary irritant effect on skin/eye</td>
<td>Irritant to skin and mucous and membranes. Danger of severe eye injury.</td>
</tr>
</tbody>
</table>

Section 12 - Ecological Information

Ecotoxicological Effects: Aquatic Toxicity 24650-42-8 Photo-initiator - EC50/48hr 28mg/L (daphnia) 5888-33-5 Isobornyl acrylate – EC50/48hr 0.9mg/L (daphnia)

Remarks: Toxic for aquatic organisms

General Notes: Water hazard class 3 (self-assessment) - extremely hazardous for water. Do not allow produce tot reach ground water, water course or sewage system, even in small quantities. Danger to drinking water if even extremely small quantities leak into the ground. Also poisonous for fish and plankton in water bodies.

Section 13 - Disposal Considerations

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disposal of Product</td>
<td>Must not be disposed with household garbage and do not allow product to reach sewage system.</td>
</tr>
<tr>
<td>Disposal of Uncleaned Packagings</td>
<td>Disposal must be made according to official regulations</td>
</tr>
</tbody>
</table>

Section 14 - Transport Information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOT Regulations: -</td>
<td>Hazard Class: -</td>
</tr>
</tbody>
</table>

Section 15 - Regulatory Information

Section 355 (Extremely hazardous substances)

Acrylic Acid (79–10–7)

California Proposition 65

No California Proposition 65 listed chemicals are known to be present.

Section 313 (Specific toxic chemical listings)

All ingredients are listed

Section 16 - Other Information

Information provided is based on our best and present knowledge. This, however, shall not constitute a guarantee for any specific product features and shall not establish a legally said contractual relationship.

Department issuing MSDS: Incure Inc. / Incure Adhesives Manufacturing Pte Ltd

Contact: support@uv-incure.com